

What is Claimed Is:

1. A method for reflection space image based rendering of an object at an interactive frame rate, comprising the step of:

5 warping each source radiance environment map in a set of source radiance environment maps associated with a set of source viewing vectors to create a destination radiance environment map associated with a destination viewing vector; whereby the object can be rendered with texture environment mapping from the destination radiance environment map.

2. The method of claim 1, further comprising the step of::

10 after said warping step, blending each warped source radiance environment map at a respective weight, and accumulating the blended warped source radiance environment maps in a buffer to create the destination radiance environment map.

3. The method of claim 1, further comprising the steps of, prior to said warping step:

15 for a frame,
 computing a destination viewing vector that points along a viewpoint of a current frame; and

20 determining a set of source viewing vectors, the set of viewing vectors representing different viewpoints associated with a corresponding set of source radiance environment maps.

4. The method of claim 1, further comprising the steps of, prior to said warping step:

25 loading a sphere geometry for a global set of source viewing vectors; and
 loading a global set of source radiance environment maps;
 for a frame,

computing a destination viewing vector that points along a viewpoint of a current frame; and

determining the set of source viewing vectors from said global set of source viewing vectors.

5 5. The method of claim 4, wherein said determining step comprises determining a number of source viewing vectors in said global set of source viewing vectors which are nearest to the destination viewing vector computed in said computing step.

10 6. The method of claim 4, wherein said determining step comprises determining at least three source viewing vectors in said global set of source viewing vectors which are nearest to the destination viewing vector computed in said computing step.

15 7. The method of claim 4, further comprising the step of computing a set of weights for the set of source viewing vectors determined in said determining step from said global set of source viewing vectors.

8. The method of claim 7, further comprising the step of normalizing the set of weights computed in said computing step.

20 9. The method of claim 7, further comprising the step of normalizing the destination radiance environment image based on a normalization of the set of weights computed in said computing step.

10. The method of claim 9, further comprising the steps of:
loading the normalized destination environment map image into a texture memory; and

rendering the object, wherein said rendering step includes environment mapping the normalized destination environment map onto the object.

11. The method of claim 1, wherein said warping step further comprises the step of:

5 generating meshes with warped sets of texture coordinates, each mesh having a respective set of warped texture coordinates corresponding to a respective warped source radiance environment map.

12. A method for reflection space image based rendering of an object at an interactive frame rate, comprising the steps of:

10 for a frame,
 computing a destination viewing vector that points along a viewpoint of a current frame;

 determining a set of source viewing vectors, the set of viewing vectors representing different viewpoints associated with a corresponding set of source radiance environment maps; and

15 warping and blending each source radiance environment map in the corresponding set of source radiance environment maps to create a destination radiance environment map at the destination viewing vector; whereby the object can be rendered in a reflection space with texture mapped from the destination radiance environment map.

13. A system for reflection space image based rendering of an object at an interactive frame rate, comprising:

 means for warping each source radiance environment map in a set of source radiance environment maps associated with a set of source viewing vectors to create a destination radiance environment map associated with a destination viewing vector; whereby the object can be rendered with texture environment mapping from the destination radiance environment map.

14. A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling a processor in a computer system to perform reflection space image based rendering of an object at an interactive frame rate, said computer program logic comprising:

5 means enabling the processor to warp each source radiance environment map in a set of source radiance environment maps associated with a set of source viewing vectors to create a destination radiance environment map associated with a destination viewing vector; whereby the object can be rendered with texture environment mapping from the destination radiance environment map.